

# Notice of Allowability

Application No.

09/923,530

Examiner

Baoquoc N. To

Applicant(s)

BERGMAN ET AL.

Art Unit

2162

## -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 04/27/2007.
2. ☒ The allowed claim(s) is/are 1,5-25 and 29-49.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All    b) ☐ Some\*    c) ☐ None    of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

### Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),  
Paper No./Mail Date 04/27/2007.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_

BQ

### **DETAILED ACTION**

1. Claims 1, 6, 25 and 49 are amended in the amendment filed on 03/27/2007.

Claims 1, 3-25, 27-49 are pending in this application.

### **EXAMINER'S AMENDMENT**

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Robert W. Griffith, Reg. No. 48,956 on 04/27/2007.

Please amend the application as follows:

1. (Currently amended) A computer-based method of retrieving one or more items from at least one database in response to a query specified by a user via a plurality of positive and negative example sets, the method comprising the steps of:

constructing a scoring function from the plurality of positive and negative example sets, wherein the scoring function is operable for use with a multidimensional indexing structure capable of supporting similarity queries and associated with the at

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least one database, wherein the scoring function is constructed by combining respective scoring functions of the plurality of positive and negative example sets, and wherein combining respective scoring functions comprises the steps of modifying the scoring functions of the plurality of positive and negative example sets so that the scoring functions of the positive example sets assign low scores to representative samples of the negative example sets, and so that the scoring functions of the negative example sets assign low scores to representative samples of the positive example sets, and combining the modified scoring functions of the plurality of positive and negative example sets;

querying the at least one database in accordance with the scoring function, wherein higher scores are associated with database items more closely related to the query; and

retrieving, via the multidimensional indexing structure, the one or more database items that have the highest score as computed using the scoring function.

3. (Canceled).

4. (Canceled).

25. (Currently amended) Apparatus for retrieving one or more items from at least one database in response to a query specified by a user via a plurality of positive and negative example sets, the apparatus comprising:

at least one processor operative to: (i) construct a scoring function from the plurality of positive and negative example sets, wherein the scoring function is operable for use with a multidimensional indexing structure capable of supporting similarity queries and associated with the at least one database, wherein the scoring function is constructed by combining respective scoring functions of the plurality of positive and negative example sets, and wherein combining respective scoring functions comprises the steps of modifying the scoring functions of the plurality of positive and negative example sets so that the scoring functions of the positive example sets assign low scores to representative samples of the negative example sets, and so that the scoring functions of the negative example sets assign low scores to representative samples of the positive example sets, and combining the modified scoring functions of the plurality of positive and negative example sets; (ii) query the at least one database in accordance with the scoring function, wherein higher scores are associated with database items more closely related to the query; and (iii) retrieve, via the multidimensional indexing structure, the one or more database items that have the highest score as computed using the scoring function; and

memory, coupled to the at least one processor, for storing at least a portion of results of one or more of the constructing and retrieving operations.

27. (Canceled)

28. (Canceled)

49. (Currently amended) A method for making a computer implemented process to enable retrieval of ~~An article of manufacture for retrieving~~ one or more items from at least one database in response to a query specified by a user via a plurality of positive and negative example sets, the ~~article~~ method comprising a ~~computer readable medium containing one or more programs which when executed~~ implement the steps of:

instantiating first computer instructions onto a computer readable medium, the first computer instructions configured to construct ~~constructing~~ a scoring function from the plurality of positive and negative example sets, wherein the scoring function is operable for use with a multidimensional indexing structure capable of supporting similarity queries and associated with the at least one database, wherein the scoring function is constructed by combining respective scoring functions of the plurality of positive and negative example sets, and wherein combining respective scoring functions comprises the steps of modifying the scoring functions of the plurality of positive and negative example sets so that the scoring functions of the positive example sets assign low scores to representative samples of the negative example sets, and so that the scoring functions of the negative example sets assign low scores to representative samples of the positive example sets, and combining the modified scoring functions of the plurality of positive and negative example sets;

instantiating second computer instructions onto a computer readable medium, the second computer instructions configured to query ~~querying~~ the at least one database in accordance with the scoring function, wherein higher scores are associated with database items more closely related to the query; and

instantiating third computer instructions onto a computer readable medium, the third computer instructions configured to retrieve ~~retrieving~~, via the multidimensional indexing structure, the one or more database items that have the highest score as computed using the scoring function.

***Allowable Subject Matter***

3. Claims 1, 5-25 and 29-49 are allowed over prior art made of records.

The following is an examiner's statement of reasons for allowance:

As to claim 1, the examiner agrees with the applicant argument "while Chen makes mention of applications that provide positive and negative samples, the reference continues to say that the query unit enhances a positive feature while excluding the negative ones. Thus, a scoring function of the query is not constructed from a plurality of positive and negative example sets as recited in the independent claims of the present invention. Further, Chen fails to disclose a multidimensional indexing structure capable of supporting similarity queries. Thus, Chen fails to remedy the deficiencies of Acharya discussed above, and the combined teaching of Acharya and Chen fails to disclose a scoring function from the plurality of positive and negative example sets, that is operable for use with a multidimensional indexing structure capable of supporting similarity queries and associated with at least one database, and further wherein the scoring function is constructed by combining respective scoring functions of the plurality of positive and negative example sets, and wherein combining

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respective scoring functions comprises the steps of modifying the scoring functions of the plurality of positive and negative example sets so that the scoring functions of the positive example sets assign low scores to representative samples of the negative example sets, and so that the scoring functions of the negative example sets assign low scores to representative samples of the positive example sets, and combining the modified scoring functions of the plurality of positive and negative example sets”

Claims 5-24 are depended on claim 1; therefore, claims 5-24 are allowed under the same reason as to claim 1.

Claim 25 is a system including the similar features as to claim 1; therefore, claim 25 is allowed under the same reason as to claim 1.

Claims 29-48 are depended on claim 1; therefore, claims 29-48 are allowed under the same reason as to claim 1.

Claim 49 is another method claim including the instructions to perform the features similar to claim 1; therefore, claim 49 is allowed under the same reason as to claim 1.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reasons for Allowance.”

### ***Conclusion***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patent and Publication:

Movellant et al.	(Pub. No. 2005/0102246 A1)	Pub. Date: May 12, 2005.
Shimura et al.	(US. Patent No. 5,644,765)	Patent date: Jul. 1, 1997.
Lee	(US. Patent No. 6,704,725 B1)	Patent date: Mar. 9, 2004.
Choi et al.	(US. Patent No. 6,744,935 B2)	Patent date: Jun. 1, 2004.
Enokida et al.	(US. Patent No. 6,999,636 B1)	Patent date: Feb. 14, 2006.
Choi et al.	(US. Pub. No. 2002/0051576 A1)	Patent date: May 2, 2002.

NPL:

Wang et al. Image retrieval with SVM active learning embedding Euclidean search, Image Processing, 2003, V. 1, pages 715-8, date Sept 14-17, 2003.

Cheuk et al. Using shape distribute to compare solid models, ACM Symposium on Solid and Physical Models, pages 273-280, date 2002.

Shaft et al. Theory of nearest neighbors indexability, ACM Transactions on Database System (TODS), V. 31, Issue. 3, pages 814-838, date 2006.

***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Baoquoc N. To whose telephone number is at 571-272-4041, or unofficial fax number for the purpose of discussion (571) 273-4041 or via e-



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mail BaoquocN.To@uspto.gov. The examiner can normally be reached on Monday-Friday: 8:00 AM – 4:30 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached at 571-272-4107.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231.

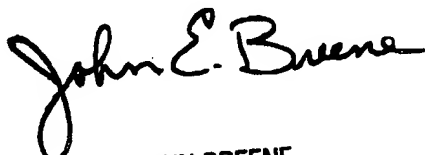
The fax numbers for the organization where this application or proceeding is assigned are as follow:

(571) 273-8300 [Official Communication]

BQ To



April 29th, 2007



JOHN BREENE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100